

Please reply to :-

Mr Austin Lewis
Secretary EAAWG
Airbus UK
07L Module 4
New Filton House
Bristol BS99 7AR
United Kingdom

Joint Aviation Authorities

**The Docket Management System,
U.S.Department of Transportation,
RoomPlaza 401, 400 Seventh Street, SW.,
Washington, DC 20590-0001. USA**

OUR REF

EAAWG/03/0046

3 Feb2003

Dear Sir

Comments on Docket FAA-1999-5401 Interim Final Rule Aging Airplane Safety

As indicated in our letter of 28 July 1999, copy as attachment 1 for reference, the Joint Aviation Authorities in Europe, JAA, have been aware of the issues addressed by the Aging Aircraft Safety Act 1991 since its publication through the activities of the various international working groups on ageing aircraft in particular the AAWG. As a consequence JAA set up the European Ageing Aircraft Working Group, EAAWG. This letter is to confirm EAAWG's general support for the thrust of the stated rules with respect to the proposals to limit the operation of aircraft that do not have a properly substantiated supplemental structural inspection programme. A prime task of EAAWG is to find ways of integrating the USA derived rules on ageing aircraft into the JAA regulatory system. This is particularly difficult when these are Operational rules covering a continuing airworthiness design issue. Having said that, the rules related to "record reviews" that constitute part of this Interim Final Rule are not addressed in this letter as it is not within the direct remit of the EAAWG to do so.

Initially, referring to 7 of the 9 specific points in our previous letter [numbers as per previous letter], please find below additional comments

1. As this issue is primarily one of safety, it is still not clear why the rules are applicable to scheduled services only and there is now an exemption for Alaska. Similar aircraft flying unscheduled or cargo operations operate in the same environment and are equally vulnerable to the ageing structural problems The rationale is not well explained in the preamble
2. It was pleasing to note that AC91-MA has not been pursued. However, its replacement, AC91-60 is considered inadequate in some respects. See point below
3. The revised wording has helped to interpret exactly as to what the limit of operation is with/without a damage-tolerance based inspection programme. However, it is still felt that a simple flow chart would help explain the various options. There remains a confusion about the role of DLGs. It appears that a large transport aircraft of any certification basis could establish and declare a DLG [which is common practice in Europe] and operate until 2010 without a damage tolerance based SID. It is also assumed that DLG is equivalent to the term DSG currently in use.
4. JAA supports the concept of declared limitations on operation but has nothing further to add from the previous statement made.

5. For aircraft transferring from country to country it is not clear how the life limits DLG would be interpreted. In some of the other ageing aircraft rules full compliance is expected on transfer; a statement on this should be included in the rule. The rule should also request that any operating limit be directly stated in the aircraft records "in an approved document" e.g. chapter 5 of the Maintenance Manual and should be included in the list required in 121.368 [d]. in appropriate units e.g. flight cycles.
6. No further comment
7. The rewording acknowledges the WFD issue but still fails to mention one of the most fundamental actions of the ageing aircraft activity namely Service Bulletin Reviews leading to terminating actions. Suggested wording to add to AC 91.56 to address this is attached see point 14 below.
As WFD is to be the subject of separate rule making it is questioned why app 2 is included in AC 91.56 at this stage.
8. The recommendations to FAA on WFD from industry via ARAC/TAEIG are understood to indicate that to avoid a significant safety concern an end date operational limit much sooner than 2010 would be appropriate for a number of aircraft types covered by this rule. This fact should be acknowledged in the preamble.

9. No further comment

Turning now to further comments raised by the issues of the Interim Final Rule

10. Repairs are not specifically mentioned in the rule but only in the preamble [mid page 72738]. It is suggested that the rule wording should be modified to clarify this point as shown:-
(a) § 121.370a Supplemental inspections.
Applicability and general requirements.
 After December 5, 2007, a certificate holder may not operate an airplane under this part unless the maintenance program for that airplane includes damage-tolerance-based inspections and procedures *for the baseline structure and Repairs Alterations and Modifications.*
11. In the previous rulemaking fuselage repairs were identified as the highest priority with Repair Assessment Programmes instituted at ¾ DSG. This is stated in the preamble as being accepted as an AMOC for the pressure boundary structure. Now in the rule all the remaining structure has to be addressed within 4 yrs which is far more severe and inconsistent with the previous action. The incorporation time should be aligned with the pressure boundary structure rule. Alternatively the AAWG should be tasked to derive a harmonised practical solution to the problem. There is also the need to clarify the extent of the AMOC; does it cover the timescale, the extent and the approach or just the approach?
12. Several definitions of major repair are in existence worldwide; the specific definition applicable in this rule should be clearly stated. From experience with the existing repairs rule on the pressure boundary it is only repairs that inhibit baseline inspections or create a new PSE that need to be considered. An approach similar to that adopted for the pressure boundary should be followed for the classification of repairs.
13. Although the WFD rule is not yet issued it would be wise to advise, in the preamble or in AC 91-56, that operators and TCH should consider WFD Issues [see GAI 20X11 app2 para 6] when undertaking the assessment of repairs under this rule
14. AC91-56: Considerable discussions have taken place between FAA and JAA within the ARAC framework on the need to formalise the way of working to establish SIDs and SB reviews. This has resulted in the attached text which it is recommended to be incorporated

into section 7. Also it is proposed to add a new paragraph to the Background section, 5, on Way of Working to reflect current industry practice in structural task groups derived from the AAWG activities.

15. AC 120 aar/xxx;
 - (a) Please confirm that this AC is intended to address structural issues only.
 - (b) The meaning of “existing” in para.7c is unclear. Does it mean “applicable” or “current”?
 - (c) In other parts of this rulemaking repairs, alterations and modifications have been dealt with together. In para.7[d] [i] and[j] only repairs and alterations are listed and inspections for repairs only are required to be reported. This seems inconsistent and also the use of the term Major causes confusion. [see point 12 above].
 - (d) In para 7 d [2] reference should be made to 121.370[a] in the last line.
16. AC 91-60: Considering that this AC is being used to guide operators of “smaller aircraft” but in scheduled operations the tone of the guidance does not seem appropriate. Many of the observations are really addressed to private owners [for example it seems wrong to remind operators to comply with airworthiness directives]. The list of components to consider for inclusion overlaps and repeats itself and would be better expressed more generally.
17. AC 91-60 As the SID to be produced covers service history, the additional wording suggested in point 14 above to cover service bulletin reviews should be included in this AC also.

It is hoped that the FAA will find these comments submitted on behalf of the European Ageing Aircraft Working Group relevant and constructive.

Yours Faithfully

Austin Lewis Secretary, European Ageing Aircraft Working Group [EAAWG]

cc M. Y Morrier, JAA Regulations Director
Prof J W Bristow Chairman of EAAWG
Mr F Sobeck AFS300
Mr B Bandle ANM 120L

Please reply to :-

Dr J W Bristow
Chairman, EAAWG
Civil Aviation Authority
Aviation House
South Area Gatwick Airport
West Sussex RH6 OYR
United Kingdom

Joint Aviation Authorities

Mr F. Sobeck
AFS-300 Flight Standards Service
Federal Aviation Administration
800 Independence Avenue S W
WASHINGTON, DC 20591
USA

OUR REF

EAAWG/99/0361

28 July 1999

Dear Sir

Comments on Docket FAA-1999-5401 Notice 99-02 Aging Airplane Safety

Page 16315 of FR Vol.64 No.63 refers to the International Compatibility of the proposed rules of this NPRM. The JAA have been aware of the issues addressed by the Aging Aircraft Safety Act 1991 since its publication through the activities of the various international working groups on ageing aircraft AAWG, SAAWG and EAAWG. Consequently on behalf of the JAA's EAAWG [European Ageing Aircraft Working Group] this letter is to express general support for thrust of the stated rules with respect to the proposals to limit the operation of aircraft that do not have a properly substantiated supplemental structural inspection programmes [damage tolerance based Inspections and Procedures]. One of the prime objectives of EAAWG is to find ways of integrating the USA derived rules on ageing aircraft into the JAA regulatory system. This is not always a simple task, particularly when they are Operating rules covering a continuing airworthiness design issue. Having said that, the issues and rules related to "record reviews" that constitute part of this NPRM are not addressed in this letter as it is not within the direct remit of the EAAWG to do so.

Turning now to specific comments

1. As this issue is primarily one of safety, it is not clear why the rules are applicable to scheduled services only. Similar aircraft flying unscheduled or cargo operations operate in the same environment and are equally vulnerable to the ageing structural problems.
2. References are given to the methods by which "damage-tolerance-based inspections and procedures" may be derived. Currently AC91-56 is at a higher revision state than quoted. Also Draft AC91-MA differs considerably from the original text, drafted as 91xx, that was jointly agreed between operators, constructors and regulators from North America and Europe under the auspices of the SAAWG in 1992/3 with significant involvement of JAA. Furthermore although addressing exactly the same issue it is not directly compatible with AC91-56 in terms of content, definition and style. To avoid confusion it is recommended that AC91MA be redrafted to be more in line with the proven AC91-56 and the opportunity taken to make editorial improvements generally, such as deleting the mandatory language, e.g. "it is essential that" and "must", and giving complete rather than partial references, e.g. NASGRO.

3. Difficulty has been experienced in trying to interpret exactly as to what the limit of operation is with/without a damage-tolerance based inspection programme might be. It is suggested that a simple flow chart would help. If the aircraft is not listed in the appendix it would be just 4 years from rule date that operations have to be stopped. Therefore it is particularly important that the appendix list is correct and the design life goals valid.
4. The preamble to the proposed appendices states that the lives are determined “appropriately, if not conservatively”, JAA supports the concept of declared limitations on operation but is concerned that
 - a] the stated lives have not all been established on the same, safe, basis and
 - b] the list does include all the possible types of interest (EAAWG is currently in the process of producing a candidate list of aircraft world-wide, with best estimates of design life goals and would be happy to share it with FAA).
5. For aircraft transferring from country to country it is not clear how the life limits would be interpreted. In some of the other ageing aircraft rules full compliance is expected on transfer; a statement on this should be included in the rule. The rule should also request that any operating limit be directly stated in the aircraft records.
6. A number of aircraft types of European manufacture although not certificated to 25.571 and 45 do fully meet AC91-56 but it is not recognised in this NPRM. The F27 is stated as meeting only 91-60 and the Shorts 330/360 series has quoted lives in the appendices. Consultation with the manufacturers is needed to clarify these positions.
7. Under Related Activity, in the preamble, mention is made of repair assessment and corrosion control but no consideration is given to either :-
 - a. a] service bulletin reviews leading to terminating actions or
 - b] widespread fatigue damage, WFD.

However in draft AC91-MA considerable emphasis is placed on the WFD issue for failsafe designs. Also recently ARAC TAEIG has made recommendations to FAA on how to approach the important WFD issue generally for all large transport designs. To avoid widespread confusion in the industry further explanation is necessary to put this rule in context with these additional ageing aircraft actions.
8. The recent recommendations on WFD from industry via ARAC/TAEIG are understood to indicate that an end date operational limit much sooner than 2010 would be appropriate for a number of aircraft types covered by this rule to avoid a significant safety concern.
9. A number of editorial points have emerged. The appendices do not appear to have the correct references. The term “age sensitive parts” is used, but as this has no commonly known engineering definition so an explanation is required. In the first paragraphs of Description of Benefits the description of fatigue is not physically correct and there is an implication that it may be something other than cracking. In this case it is only cracking that is of concern and it is suggested that the wording is corrected by reference to a standard text or it is deleted. Similarly in Historical Perspective there is reference to “age related fatigue damage” which is an unclear term, does it mean corrosion fatigue or is it the conventional understanding of damage due to repeated cyclic loading?.

I trust you will find these comments on behalf of the European Ageing Aircraft Working Group both constructive and relevant.

Yours Faithfully

John W Bristow Chairman, European Ageing Aircraft Working Group [EAAWG]

cc M. Y Morrier JAA Regulations Director
Mr N. Livings Secretary to EAAWG

Add to AC91-56 the following three sections and appendix

AFTER "INTRODUCTION" A NEW SECTION:-

5. WAY OF WORKING

a. General

On initiative of the TCH and its PCA, a STG should be formed for each aircraft model for which it is decided to put in place an ageing aircraft programme. The STG shall consist of the TCH, selected operator members and a representative from the PCA. Other NAAs may be included as part of the STG at the option of the individual STG. The objective of the STG is to complete all tasks covered in this ACJ in relation to their respective model types, including the following:

- Develop model specific programmes
- Define programme implementation
- Conduct recurrent programme reviews as necessary.

It is recognised that it might not always be possible to form or to maintain an STG, due to a potential lack of resources with the operators or TCH. In this case the above objective would remain with the appropriate PCA and operators or TCH as applicable, with a possible involvement of other NAAs.

An acceptable way of working for STGs is described in "Report on Structures Task Group Guidelines" that was established by the AAWG with the following additional clarifications:

b. Meeting scheduling:

It is the responsibility of the TCH to schedule STG meetings. However if it is found by the appropriate PCA that the meeting scheduling is inadequate to meet the STG working objectives, they might initiate themselves additional STG meetings.

c. Reporting:

The STG would make recommendations for actions via the TCH to the PCA of the TCH. Additionally, the STG should give periodic reports (for information only) to AAWG/EAAWG as appropriate with the objective of maintaining a consistent approach.

d. Recommendations and decision making

The decision making process described in AAWG Report on Structures Task Group Guidelines paragraph 7 leads to recommendations for mandatory action from the TCH to its PCA. In addition it should be noted that the Airworthiness Authorities (TCHs PCA and/or NAA of the state of registry) are entitled to mandate safety measures related to ageing of aircraft structure, in addition to those recommended by the STG, if they find it necessary.

e. Responsibilities:

The PCA is responsible for issuing ADs or operational rules to mandate the STG's recommended ageing aircraft model specific programme. The NAAs of states of registry are responsible for ensuring the implementation of the ageing aircraft programme by their operators. The PCA and the TCH are responsible for monitoring the effectiveness of the ageing aircraft model specific programme, and to implement changes in the programme, as necessary.

EXPAND SECTION 7:-

7. SERVICE BULLETIN REVIEW and MANDATORY MODIFICATION PROGRAMME

The Type Certificate Holder (TCH), in conjunction with operators, is expected to initiate a review of all structurally related inspection--and modification SBs and determine which require further actions to ensure continued airworthiness, including mandatory modification action or enforcement of special repetitive inspections

Any aircraft primary structural components that would require frequent repeat inspection, or where the inspection is difficult to perform, taking into account the potential airworthiness concern, should be reviewed to preclude the human factors issues associated with repetitive inspections

The SB review is an iterative process (see appendix 5) consisting of the following items:

a. The TCH should review all issued structural inspection--and modification SBs to select candidate bulletins, using the following 4 criteria:

- 1) There is a high probability that structural cracking exists
- 2) Potential structural airworthiness concern.
- 3) Damage is difficult to detect during routine maintenance
- 4) There is Adjacent Structural damage or the potential for it.

This may be done by the TCH alone or in conjunction with the operators as a preliminary STG meeting.

b. The TCH and operator members will be requested to submit information on individual fleet experience relating to candidate SBs. This information will be collected and evaluated by the TCH. The summarised results will then be reviewed in detail at a STG meeting (see c.).

c. The final selection of SBs for recommendation of the appropriate corrective action to assure structural continued airworthiness taking into account the in-service experience, will be made during an STG meeting by the voting members of the STG, either by consensus or majority vote, depending on the preference of the individual STGs.

d. An assessment will be made by the TCH as to whether or not any subsequent revisions to SBs affect the previous decision made. Any subsequent revisions to SBs previously chosen by the STG for mandatory inspection or incorporation of modification action that would affect the previous STG recommended action should be submitted to the STG for review.

e. The TCH should review all new structural SBs periodically to select further candidate bulletins. The TCH should schedule a meeting of the STG to address the candidates. Operator members and NAAs will be advised of the candidate selection and provided the opportunity to submit additional candidates.

ADD NEW PARA AT END:-

12. IMPLEMENTATION.

Once the PCA has approved the document covering any of the issues covered in this ACJ, operators must amend their current structural maintenance programmes to comply with and account for the applicable actions. The programmes will either be mandated by ADs or by operational rules, which require operators to amend the current structural maintenance programmes. Any ADs issued as a result of a WFD finding that require structural modification will be handled separately. In all cases, compliance is required in accordance with the applicable regulations.

From the industry/authorities discussions leading to the definition of the programmes detailed in sections 6 to 10, above, appropriate implementation times have emerged. These programme implementation times are expressed as a fraction of the aircraft model's DSG/ESG.

| | |
|-----------|-------------|
| CPCP | 1/2 DSG/ESG |
| SSID | 1/2 DSG/ESG |
| SB-Review | 3/4 DSG/ESG |
| RAP | 3/4 DSG/ESG |
| WFD | DSG/ESG |

In the absence of other information prior to the implementation of these programmes the limit of validity of the existing maintenance programmes should be considered as the DSG/ESG.

Typically dependant on the date of the regulatory action mandating these programmes a period of one year to incorporate into an operators maintenance programme should be considered

ADD NEW APPENDIX:-

APPENDIX 5

GUIDELINES FOR THE DEVELOPMENT OF A SERVICE BULLETIN REVIEW AND MANDATORY MODIFICATION PROGRAMME

1. Introduction

This Appendix provides interpretation, guideline and JAA accepted means of compliance for the review of Structural Service Bulletins including a procedure for selection, assessment and related recommended corrective action for ageing aircraft structures.

2.1 SB selection process

The SB selection, review, assessment and recommendation process within the STG is summarised in figure A. For the first SB review within STG meeting, all inspection SB should be selected. Afterwards, the TCH should update periodically a list of SB which were already selected for a review with all decisions made, and add to this list all new and revised SB. Moreover, some specific modification SB not linked to an inspection SB may also be selected for review.

When an SB is selected, it is recommended to select also, in the same package, inspection SB that interact with it and all related modification SB.

The main criteria for selecting SB are the following :

(a) High probability that structural cracking exists

Note:

- (1) Related to the number and type of finding in service and from fatigue testing
- (2) A “no finding” result should be associated to the number of performed inspections
- (3) The type of finding should include an analysis of its criticality.

(b) Potential structural airworthiness concern

Note:

Structural airworthiness of the airplane is dependent on repeat inspections to verify structural condition and therefore on inspection reliability

A short repeat inspection interval (e.g. short time to grow from detectable crack to a critical length divided by a factor) will lead to possible increased risk of missing damage.

Special attention should be paid to any single inspection tasks involving multiple repeat actions needed to verify the structural condition that may increase the risk of missing damage (e.g. lap splice inspections).

(c) Damage is difficult to detect during regular maintenance

Notes:

Considerations under this criterion are:

- the areas to inspect are difficult to access;
- NDT methods are unsuitable;
- human factors associated with the inspection technique are so adverse that crack detection may not be sufficiently dependable to assure safety.

(d) There is adjacent structural damage or the potential for it

Note:

Particular attention should be paid to areas susceptible to Widespread Fatigue Damage (WFD) and also to potential interaction between corrosion and fatigue cracking for instance between fastener damage (due to stress corrosion or other factors) and fatigue cracking.

It is recommended to consider the potential interaction of modifications or repairs usually implemented in the concerned areas to check whether the inspections are still reliable or not (operators input)

Operators information input should address the points as detailed in figure B. This information should be collected and analysed by the TCH for the STG meeting.

If for a given selected SB there is not enough in-service data available before STG meeting that would enable to make a recommendation, its review may be deferred until enough data are available. The TCH should then check periodically if these data become available.

Concerned operators and Airworthiness Authorities should be advised by TCH of the SB selection list and provided the opportunity to submit additional SB. For this purpose, the TCH should give the operators enough information in advance (e.g. 2 months), for them to be able to properly consider the proposed selection and to gather data.

2.2 STG meeting : SB review and recommendations

It is recommended to review at the same time all SB that can interact, the so-called SB package in the selection process. The meeting should start with an STG agreement on the selected SB list and on those deferred.

At the meeting the TCH should present its analysis of each SB utilising the collection of operator input data. The STG should then collectively review the ratings (Figure B Section 2) against each criteria to come to a consensus recommendation.

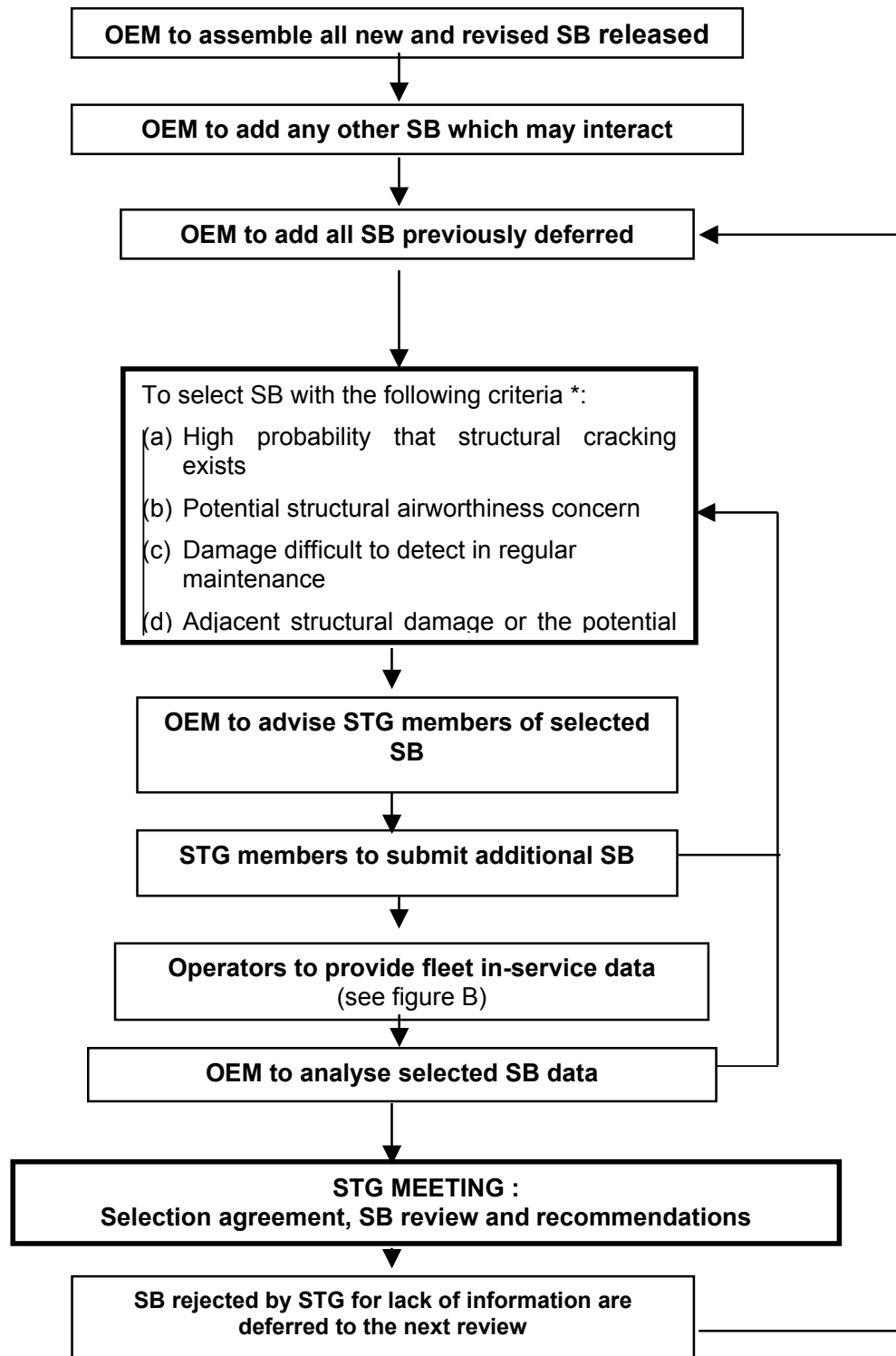
Such a STG recommendation for a selected SB shall consider the following options:

- a. to mandate a structural modification at a given threshold
- b. to mandate selected inspection SB
- c. to revise modification or repair actions
- d. to revise other SB in the same area concerned by damages
- e. to review inspection method and related inspection intervals
- f. to review ALI/MRB or other maintenance instructions
- g. to defer the review to the next STG and request operators reports on findings for a specific SB or request an inspection sampling on the oldest aircraft

STG recommendations for mandatory action are the responsibility of the TCH to forward to his PCA for appropriate action. Other STG recommendations are information provided to the STG members. It is their own responsibility to carry them out within the appropriate framework.

Figure A

SB SELECTION PROCESS AND SB REVIEW



* This may be done by the TCH alone or in conjunction with the operators as a preliminary STG meeting.

Figure B

OPERATORS FLEET EXPERIENCE

IN-SERVICE DATA / SECTION 1

NAME OF THE OPERATOR

AIRCRAFT MODEL/SERIES

SERVICE BULLETIN (SB) NUMBER _____
TITLE

RELATED INSPECTION/MODIFICATION SB :

1/ _____

2/ _____

3/ _____

SB MANDATED ? ☐ YES ☐ NO

IF NOT, SB IMPLEMENTED IN MAINTENANCE PROGRAMME ? ☐ YES ☐ NO

NUMBER OF AIRCRAFT TO WHICH SB APPLIES (INCLUDING ALL A/C IN THE SB
EFFECTIVITY) _____

NUMBER OF AIRCRAFT EXCEEDING SB INSPECTION THRESHOLD (IF APPLICABLE)

NUMBER OF AIRCRAFT INSPECTED PER SB (IF APPLICABLE) ?

SPECIFY TYPE OF INSPECTION USED

NUMBER OF AIRCRAFT WITH REPORTED FINDINGS

TYPE OF FINDINGS

NUMBER OF FINDINGS DUE TO OTHER INSPECTIONS THAN THE ONE PRESCRIBED IN SB (IF
APPLICABLE) _____

SPECIFY TYPE OF INSPECTION USED

NUMBER OF AIRCRAFT EXCEEDING SB TERMINATING MODIFICATION THRESHOLD (IF
APPLICABLE) _____

NUMBER OF AIRCRAFT IN WHICH TERMINATING MODIFICATION HAS BEEN ACCOMPLISHED (IF
APPLICABLE) _____

NEED THIS SB (OR RELATED SB) BE IMPROVED ? ☐ YES ☐ NO

COMMENTS: _____

Figure B [continued]

IN-SERVICE DATA / SECTION 2

| | (A) | (B) | (C) | (D) | (E) |
|----------|-------------------------------|---------------------------------------|-------------------------|--------------------|---------------------------------|
| CRITERIA | INSPECT- ABILITY ACCESS | FREQUENCY REPETITIVE INSPECTION | FREQUENCY OF DEFECTS | SEVERITY RATING | ADJACENT STRUCTURE DAMAGE |
| RATING | | | | | |

(A) INSPECTABILITY/ACCESS RATING

- OK ♦ Inspection carried out with little or no difficulty.
- Acceptable ♦ Inspection carried out with some difficulty.
- Difficulty ♦ Inspection carried out with significant difficulty.

Note: Rating should consider difficulty of access as well as inspection technique and size of inspection area.

(B) FREQUENCY OF REPETITIVE INSPECTIONS RATING

- OK ♦ Greater than 6 years.
- Acceptable ♦ Between 2 and 6 years.
- Difficulty ♦ Less than 2 years.

(C) FREQUENCY OF DEFECTS NOTED RATING = % OF THOSE AEROPLANES BEYOND THRESHOLD ON WHICH DEFECTS HAVE BEEN FOUND

- OK ♦ No defect noted.
- Acceptable ♦ Defects noted but not of a significant amount (less than 10%).
- Difficulty ♦ Substantial defects noted (greater than 10%).

(D) FINDING SEVERITY RATING

- OK ♦ Airworthiness not affected.
- Acceptable ♦ Damage not of immediate concern, but could progress or cause secondary damage.
- Difficulty ♦ Airworthiness affected. Damage requires immediate repair.

(E) ADJACENT STRUCTURE DAMAGE RATING (MULTIPLE SITE DAMAGE, MULTIPLE ELEMENT DAMAGE, CORROSION, ETC.)

- OK ♦ Low rate of adjacent structural damage.
- Acceptable ♦ Medium rate of adjacent structural damage.
- Difficulty ♦ High rate of adjacent structural damage/Multiple service actions in area.